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THE ZOOLOGIST:

A

POPULAR MONTHLY MAGAZINE

OF

NATURAL HISTORY

AND

JOURNAL FOR RECORDING FACTS & ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES, ANNELIDES,

INSECTS, WORMS, ZOOPHYTES, &c.

THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,

MIGRATIONS, NESTS AND YOUNG.

No. CLXI.

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Birds' Eggs.

MR. J. C. STEVENS will Sell by Auction, at his Great Room 38, King Street, Covent Garden, on Friday, March 7, at One o'clock precisely, **A COLLECTION OF EGGS**, made by JOHN WOLLEY, Jun., Esq., in LAPLAND during the year 1855. May be viewed on the day prior and morning of Sale, and Catalogues had by enclosing two Postage Stamps to Mr. J. C. STEVENS, 38, King Street, Covent Garden.

Capture of Parnassius Apollo at Dover; also Argynnis Lathonia, Chrysophanus dispar and Catocala Fraxini, near Chiselhurst, in Kent.—Mr. Dale having obligingly given me a clew to the history of these splendid captures, I immediately wrote to Mr. G. B. Wollaston, of Chiselhurst, who was acquainted with the particulars, and forthwith received the following most courteous reply:—

“Chiselhurst, February 1st, 1856.

“My dear Sir,—As you wish for more particulars about the capture of *Parnassius*, I have been to-day to see the person who took it, and hear from his own lips all about it. He was lying on the cliffs at Dover, in the end of August or the beginning of September, 1847 or 1848 (he cannot remember which), when the butterfly settled close to him, and not having his nets with him, captured it by putting his hat over it; he then carried it to his lodgings and shut window and door, and let it go in the room and secured it. He had not the slightest idea what it was till he saw it figured in some work afterwards. The insect has all the appearance of having been taken as he describes; and as he has no object to deceive, and is a person in whom I can place implicit confidence, I have no doubt, in my own mind, that the specimen is a British one. It will probably be in my own collection before this letter reaches you, when I shall be most happy to show it to you at any time you are this way. With regard to *Argynnis Lathonia*, I have perhaps, unintentionally, misinformed Mr. Dale. It was captured in this neighbourhood, *not* by himself, but by an intimate friend and fellow-entomologist, now dead. He has taken *Colias Hyale*, female, on this common, *Chrysophanus dispar*, male, in this parish,—his friend the female: his friend also has taken *Catocala Fraxini* in the neighbourhood, and *Zeuzera Æsculi* in this parish. All these insects are in his collection, and have been taken now some years. If I have rightly described them, none of these statements need be doubted. I shall have much pleasure in giving you further particulars should you require them, and remain

“Yours very sincerely,

“GEO. B. WOLLASTON.”

[Mr. Wollaston being, perhaps, comparatively unknown to the Entomological world, I shall be excused if I say that he is a botanist of high standing, and of the most scrupulous veracity and accuracy. It will, I am sure, give him great pleasure to investigate the matter further and to reply to any queries that may be asked. I am quite unacquainted with Mr. Wollaston's informant, with whom the *onus probandi* now appears to rest.—*Edward Newman*].

Trochilium chrysidiformis.—In Mr. Stainton's 'Annual' for 1856, page 29, Mr. J. Brown, of Burton-on-Trent, has “had a specimen in his collection for several years, from Lancashire:” a little more information is necessary: will Mr. Brown be good enough to publish in the 'Zoologist' from whom he received the specimen, and particulars of capture? The only species that have occurred in this part for many years are *T. sphegiformis*, *T. culiciformis* and *T. tipuliformis*.—*R. S. Edleston; Manchester, December 20, 1855.*

Occurrence of Luperina abjecta in Flintshire.—I, last summer, took a specimen of *Luperina abjecta*, near Holywell, in Flintshire, by treacling the trees. As I am only a beginner, I should not have ventured to pronounce it to be a rare species, had not Mr. F. Brockholes, of Birkenhead, been kind enough to examine it, and assured me that it was so.—*Alfred Walker; Chester, January 21, 1856.*

Capture of Lepidoptera near Horsham.—I beg to inform you that I have captured since 1850, — *Glæa rubiginea*, two specimens, one on ivy, and one at sugar; *Xylina petrificata*, six specimens, one on ivy, the rest at sugar; *Xylina semibrunnea*, two specimens at sugar: they were taken between October 19th and November 6th. *Rusper* is on the border of Sussex, about eleven miles south of Mickleham, where these insects were taken by Mr. Walton.—*H. I. Gore; Rusper Rectory, Horsham, Sussex, November 24, 1855.*

The Larva of Carposapsa pomonana feeding on the Fig.—That *Carposapsa pomonana* feeds on the fig may not be generally known: allow me to state the fact. A larva of this species, which I took out of foreign figs covered itself with a white web on the 19th of December, 1854, and the perfect insect appeared in April last. There was a fire in the room in which I kept it, which would hasten its appearance to some extent.—*Thomas Chapman; Glasgow, December 19, 1855.*

Observations on Micro-Lepidoptera.—Having lately received from Mr. T. Wilkinson, of Scarborough, a letter, in which there are several items of valuable information, I send you the following extracts for publication:—

Exapate gelatella. The larva feeding between united leaves of willow, in July, 1850, near Bristol: the moth flies freely from ten to twelve o'clock on fine sunny mornings.

Röslerstammia Erxlebelli. Found in plenty at Leigh Wood, near Bristol, on the leaves of *lime-trees*; * frequently in *copulâ* on the leaves; also found on the wing on fine sunny mornings the last week in May and beginning of June. Mr. Wilkinson inclines to think there is a second brood towards the end of August and beginning of September, but not nearly so numerous.

Bucculatrix hippocastanella. This occurred in plenty, frequenting the same trees.

Egoconia quadripunctella. Four fine specimens taken on the 31st of July, 1851, in Clifton, on an old wall much covered with moss.

Laverna ochraceella. The larva begins to mine from the root of the *Epilobium hirsutum* in the spring, as soon as the plant begins to shoot: Mr. Wilkinson found the larvæ, then *very young*, the second week in May last, sometimes as many as four on one stem: the larva never by any chance quits the stem till about to change to the pupa. This habit of the larva is a real discovery, for we Londoners had always failed to find where the larvæ came from, though the fact of the perfect insects always going greasy led us to conclude that the larvæ must be *internal feeders*.

Chrysoclista Schrankella. The larvæ in great plenty at Scarborough on the leaves of the same plant.—*H. T. Stainton; Mountsfield, Lewisham, January 21, 1856.*

Occurrence of Tinea imella at Stockton.—On the 6th of July last, whilst enjoying my pipe in the evening, at the back of the garden-wall of my house, a single specimen of this insect was started from the wall, which I had the good fortune to secure. It is a female, and in fine condition.—*John Scott; South Stockton, Stockton-on-Tees, January 1, 1856.*

* This would appear to confirm the account given by the late Madame Lienig, that "the larva feeds on limes in May and September, on the under side of the leaves, in which it eats large round holes."—*Isis, 1846.*

Capture of Tinea pallescentella at Stockton.—In a neighbour's house, where I was sitting in the beginning of September last, with the gas lighted and the window a little raised, an example of this hitherto scarce species came flying in, and rested on the back of a chair. I boxed it safely, and it now stands in my collection: it is a little worn.—*Id.*

Occurrence of Nemophora pilella at Stockton.—In the beginning of May, last year, I beat this insect out of a thorn-hedge, and again in June one or two others fell to my lot. I may add that I have not seen any specimens so dark as those taken by me. No doubt it only requires looking for by others to make them as fortunate as myself.—*Id.*

Note on Antherophagus nigricornis and Bombus sylvarum.—Mr. Smith, in his admirable work on British bees, records the finding of *Antherophagus glaber* in the nest of *Bombus Derhamellus*. This season I met with an instance of the manner in which such insects may be transported thither. When hunting Bombs, in September last, two peculiar motions of a neuter of *B. sylvarum* attracted my attention: it was clinging to a thistle-head, and wriggling and twisting its legs about in all directions. On getting hold of it I found that a large specimen of *Antherophagus nigricornis* had seized the tarsus of a hind leg between its jaws, and was holding on like grim Death. I put both into my bottle, and the *Antherophagus* retained its hold until both were killed by the fumes of the laurel.—*Thomas John Bold; Angus' Court, Bigg Market, Newcastle-on-Tyne, December 27, 1855.*

Occurrence of Agabus pulchellus in Scotland.—I am indebted to Mr. Wailes, of Newcastle, for a specimen of the *Colymbetes pulchellus* of Heer, captured by Mr. Wailes, in company with others of the same species, in Loch Achray, and on the north shore of Loch Katrine, in September, 1853. After giving this insect a most careful examination, although having no doubt that Mr. Wailes has correctly named it as the *C. pulchellus* of Heer, I still feel hesitation in considering it distinct as a species, since it seems to me to differ chiefly from the too familiar *A. maculatus* in the colour of the elytra, which are uniformly dark and immaculate. In answer to this suggestion, Mr. Wailes writes, "The facies of the insect is very different from that of *C. maculatus*; it is much more elongate and smoother, and Heer draws the distinction very accurately: it is not mentioned by Aubé, whose work is anterior to Heer's." Seeing my opinion opposed to that of such very careful and acute observers as Heer and Mr. Wailes, I willingly withdraw it, too delighted to add another species to my series of *Colymbetes*.—*Edward Newman.*

Query as to the Eggs of Agabus.—Can any of your readers tell me where the eggs of the *Agabi* are deposited, or if any of the species have been noticed with them adhering to the legs or to the body as in *Hydrous piceus*? My reasons for asking these questions are as follows. In taking the species which I named *dispar*, I observed that many of the females had attached to the hairs on the under side of the anterior and intermediate femora (generally to the latter), bundles of a white granular matter, which an examination with my pocket glass led me to believe were eggs. This I was unable satisfactorily to determine, for not reaching home until long after nightfall, they had to be set aside until next morning when I found that the crawling of the insects over each other and upon the damp paper in the bottle, had so much altered their appearance that I did not submit them to microscopic examination. In thinking the matter over since, I am much inclined to believe that these bundles *must* have been eggs: had it been a substance on which the species had been feeding, the

males would have been in the same plight as their partners: such, however, was not the case, whilst fully two-thirds of the females were so burdened.—*Thomas John Bold; Angas' Court, Bigg Market, Newcastle-on-Tyne, December 27, 1855.*

Capture of Agabus dispar.—I have this season had the pleasure of taking a fine series of *Agabus dispar* (or, as our leading Coleopterists say, *uliginosus*), the first time since 1848, although I have oft carefully searched the locality. This uncertainty of occurrence and peculiarity of habit is a case in point of the necessity for close and continued search, even of the same places, year by year, if we would add novelties to our insect fauna. Even the commonest species of Hydradephaga will swarm for one season, then disappear and their places frequently be filled by others. By taking advantage of this, and working the ground thoroughly, more substantial progress will be made than by collecting at great distances, when the most of our time is sacrificed in travelling. But to return to *A. dispar*: immediately after the heavy July rains, thinking the time favourable, I went to Boldon Flats, Durham, for the express purpose of seeking this and one or two other rarities. I found the country flooded; in many places only the tops of the ridges above water. Commencing in the most "likely" places, those whence I took it in 1848, I worked all the forenoon, and hard too, but without producing anything better than *femoralis*. Disappointed and tired, I sought the shade of a hedge (for the sun was scorching hot), had some lunch, rested a little, and then set too and tried the "unlikely" places; one of these, the recently flooded furrows of a grass-field, produced what I sought. These "diggings," however, required hard work to make them productive; I had to dredge them over and over again, and the more I puddled the water the greater was my success. In addition to *A. dispar*, the locality furnished me with examples of *Hydroporus rufifrons*, *Duft.*, *H. vittula*, *Erich.*, and *H. nigrita*, *Fab.* When amongst the *débris* in the net, *A. dispar* simulates death with a good deal of perseverance, and it is quite necessary to allow time for careful examination before it be emptied.—*Id.*

Capture of and Localities for Hydroporus latus, Steph.—This insect is apparently one of our rarest and most local species. As this may arise from the peculiarity of its habit, I think that a notice of such, with localities, will probably lead to its being found elsewhere. The first time that I found it was in the Ouseburn, Northumberland, in July, eight or ten years ago, when I took a couple of specimens; here it was amongst shelving rocks: this locality I have dredged every year since, but without success. I next found a single specimen in the river Derwent (Durham), amongst gravel, in April, 1854. During the past season (1855) I sought for it with considerable assiduity, and found it in two widely different localities: the first was in an open drain on a Cumberland common, near Lannercost, and locally known as "Mrs. Bell's Common." Here, however, they were few and far between; a whole day's hard working (under a burning sun and tormented by "clegs," in hundreds) producing twenty-two specimens, of which several were imperfect: this was in the first week in July. In September I visited one of the wildest of our wild mountain streams, the "Devil's Water" (Durham), which, rising on extensive moors, runs a furious course over a rocky bed, and empties itself into the Tyne between Hexham and Corbridge. Here I again found *H. latus*, and in what I believe will prove to be its natural habitat, viz., amongst the large stones of a rapid running river: for although I found the greater number of specimens in the stream near Lannercost, still I think that they must have come there from the river King, which is a stream of the same nature as the Devil's Water, and to which the drain runs: this I hope more

particularly to test another season. On being disturbed, *H. latus* immediately crawls down amongst the stones, not rising in the water as *H. Davisii*, *H. septentrionalis*, and others invariably do: hence an ordinary net is of no use whatever, as it will not go in amongst the stones, and dredging them up is quite impossible. The dozen that I caught were taken by hand, an uncomfortable and very slow process. Another season I must manufacture a net for the especial benefit of this broad-backed fellow, whose powerful frame and robust legs are so well adapted for clinging to the stones of a mountain torrent.—*Id.*

Synonymic List of the British Species of Philhydrida, with Notices of Localities, &c. By the REV. HAMLET CLARK, M.A.

IN a complete systematic arrangement of Coleoptera, the group of water-beetles, Philhydrida of Stephens, are evidently more closely allied to the Lamellicornes than to the Hydrocantharidæ; they occupy the same place with regard to the former that the Hydrocantharidæ do with reference to the Geodephaga; they are subfamilies of two distinct families: this is abundantly evident from their structure and habits, and this position has been assigned to them by our principal writers. Practically, however, to a field naturalist the two groups are inseparable; no one can pay any attention to one without constantly meeting with species of the other: in the examination of pools and ditches Hydrobii and Berosi are found in the same net with Hydropori; while in streams Elmidæ and Hydrænæ occur with Hydroporus rivalis, *H. latus* and *H. septentrionalis*. I propose, therefore, as an addendum to my previous paper on Hydrocantharidæ, to point out, so far as I am able, the British species of Philhydrida; noticing, when necessary, their localities, or any peculiarities of structure or nomenclature.

A few hints as to the best modes of collecting these insects may be of interest to the younger readers of the 'Zoologist.' Hydrocantharidæ are water rovers; they affect certainly the shelter of aquatic plants, but love to wander from end to end of their pool or ditch; the Rypophaga, on the contrary, are more stationary: some of them, as Helephorus, Hydrochus, Philhydrus, are found on the leaves and stems of water-plants; Heterocerus, Parnus, Georyssus, Octhebius and, I believe, Sperchæus, live in or on the surface of mud; Elmis, Hydræna and Limnebius are found in greatest abundance in mossy rivulets;

Cercyon and Sphæridium (with few exceptions) in decaying vegetable substances.

Heteroceræ are found in profusion on the muddy banks of pools or rivers, by digging them out of their burrows just below the surface; Parnus abound at the roots of grass in almost every wet muddy locality: Georyssus was taken some years ago by Mr. Waterhouse at Southend, on wet banks of a little stream trickling down the cliffs to the west of the town; the insect covers itself with a coating of mud, in which it appears to live, and which adheres to it after death; it was taken plentifully in 1835, running about, as atoms of wet clay, on the margins of the stream; Octhebius also is found on mud, but below the surface of the water: the collector should provide himself with a stick or stout branch with which he may thoroughly stir up and disturb the whole of the mud at the bottom of the water; by this means the insects lose their hold and float up to the surface in great numbers: they are then readily secured by the water-net.

The moss-loving groups of Elmis and Hydræna require quite a different mode of operation; they have been met with in the utmost profusion by the Rev. W. Hey in Yorkshire; Dr. Power in Northumberland; and myself in several localities in North Wales. In searching for them the entomologist will look out for mossy stones, which abound inland at the sides of the channel of mountain streams; for, though the stream itself will often supply occasional examples, these mossy stones are their metropolis. If the stream flows over the stone to be examined, let the net be placed on the lee side, so that when the moss is disturbed all the contents may be carried by the stream at once into it; then, by raking up the moss with the fingers, all its inhabitants are of course secured. If the moss is dry, or only partially under water, either the stream must be made to flow over it, or it may be torn off and washed in the net.

In this group, more perhaps than in any other, neatness and care in setting out the insects for the cabinet is requisite: I attach the greatest importance to this point: a single example of an insect well displayed on card is more valuable than twenty imperfectly mounted. I am satisfied, from a careful consideration of Mr. Stephens' cabinet, and from a comparison of its state with the species which he has sought to establish out of its contents, that not a few of the errors into which we have fallen in nomenclature are owing simply to the little time and care allotted to mounting examples. The naturalist who has captured but little during the season, but who has not spared pains in preparing that little as perfectly as possible, so that the insects on his card repre-

sent, as closely as he is able to make them, the characters, positions and habits of the insects as he saw them alive—that naturalist has probably done more towards clearing up some of our difficulties than another who may have been, in the field, infinitely more successful, but who has lacked the leisure faithfully to represent nature in his cabinet.

Of the different modes of setting out these insects,—gumming on points of wedges of card, as was formerly adopted; setting out on talc, or pinning with iron wire, as obtains on the Continent; or mounting the specimens on a flat surface of card,—the last is *facile princeps*, pre-eminently the best. Insects fastened on the points of cards are never safe; by the least spring of the pin in moving them from the cabinet they are probably lost for ever; and no one who has experienced the difficulty of handling specimens mounted after the foreign method can, I think, prefer that; but well-carded specimens, with tolerably stout pins, are free from all these objections; if dusty, they may be brushed with a camel-hair pencil: if required to be placed under the microscope, they are most readily adjusted; should they become loose from the cork of the travelling box, they are well protected from injury; and, which is of the greatest moment, they best represent the insect in its living state.

The “effects of isolation” and of peculiarity of locality are nowhere more marked, and nowhere more important to be carefully noticed, than among the Rypophaga, though to what extent these manifest results are to be allowed to affect species is a question which presents itself in every department of nature as one of great interest. I do not propose to enter upon this subject now, but notice it as suggesting the great importance of registering carefully the date and locality of each capture: to know certainly that an insect was taken at such a date, from moorland, from mountain, or from fen, is not merely knowledge that makes the collection of greater interest, but the only process by which we can hope to assign to each of the many varieties of this group its proper position and typical specific representative.

As to the nomenclature of the species, no two authorities and no two cabinets agree; the subject has received comparatively little attention, and hence there is no ground for surprise at meeting with difficulties: these difficulties may perhaps be an excuse for me, should any error be discovered in the synonymy proposed; but that they have not been insurmountable is owing to the great and valued assistance which I have received from Dr. Power and Mr. Waterhouse. I do not say that these excellent entomologists have endorsed every name, as

that would make them responsible for errors for which I alone am accountable; but that they have, in several instances, in which, without them, I should have arrived at doubtful and unsatisfactory conclusions, either confirmed my opinion by their own, or given opportunity for a reconsideration of the point in question.

To Dr. Gray and the gentlemen of the Entomological Department in the British Museum I am also under obligations, for the courtesy with which they have allowed me free access to the historically valuable collection of the late Mr. Stephens, now under their charge.

HAMLET CLARK.

Northampton, February 13, 1856.

Humming in the Air.—White, in his 'Selborne,' writes of not being able to account for the "humming in the air"; Captain Chawner told me that since White's time the country people had found out what occasioned it, and the Captain and I tried the experiment by throwing a stone up in the air, when the humming was observed, and the stone, in its descent, was accompanied by a specimen of *Helophilus*. I recollect, at school, we used to throw up a piece of white or brown shard to attract a white or brown butterfly, and down would come the butterfly in the same manner. — *J. C. Dale; Glanville's Wootton, January 12, 1856.*

Excrescences on the Leaves of Willows.—Last autumn I noticed at Norwood, Sydenham and Forest Hill, the leaves of the young willow-trees to be covered with a curious brown excrescence, which, at a little distance, had quite the ornamental effect of a blossom. Will you oblige me, any time at your leisure, with the name of the insect that caused this appearance?—*William Atkinson; January, 12, 1856.*

[Please to send some when again met with, and I will try to explain them: a very common excrescence is caused by *Euura Gallæ*.—*Edward Newman*].

Wasp in January.—A wasp in January is rather a rare occurrence; one, however, visited a member of this household the night before last while in bed, and stung him three times before it was secured. I think this worth noticing, as last summer their scarcity was the subject of general remark.—*George Guyon; Ventnor, Isle of Wight, January 21, 1856.*

Note on the British Museum Lists of British Insects.—I observe that *Forficula decipiens* is omitted: I presented specimens of this insect to the British Museum Cabinet: is it possible it can be only a variety? and if a variety, of which species? Again, *Forficula forcipata* I find on the coast, while *borealis*, although very similar, I take here by beating the hedges, and never in company with *F. auricularia*, which comes in plenty to sugar when placed as a bait for moths. I also see that *Panorpa germanica* of Curtis is not considered distinct from *P. communis*; I never take them together.—*J. C. Dale; Glanville's Wootton, January 12, 1856.*

Effects of Light and Heat on Actiniæ.—In the last number of the 'Zoologist' are some remarks by Mr. Warrington, on the injurious effects of exposing an aquarium too long to the heat of the sun. In July, 1854, I lost some Actiniæ (sea-anemonies), which I had conveyed to Richmond and kept about three weeks, by leaving the bottle incautiously on the window-sill exposed to the sun for two or three hours. Some fresh-water animals in another bottle similarly placed shared the same fate, save one little *Hydroporus pictus*, which, thanks to a good constitution, survived and continued to flourish among all the *débris* for at least three or four months, though no growing plants were afterwards introduced, obtaining sufficient oxygen probably by excursions to the surface. Screens of muslin, &c. are perfectly efficient when properly attended to; but during absence from home, when the aquarium must be left to the care of others, the inhabitants are very likely to suffer from too little sun-light or too much sun-heat. I, therefore, put forth the following suggestion, in case any one chooses to ascertain its feasibility. Since photography has become a popular science, it is pretty generally known that the three principles existing in common light, — luminosity, heat and chemical action, are to a great extent separable, and reside respectively in the yellow, red and blue rays of the spectrum. It is moreover, I believe, considered that growing plants decompose carbonic acid and liberate the oxygen under the influence of the luminous or yellow rays: if this latter opinion is correct, would not the interposition of a screen of yellow glass, while giving free admittance to the purifying influence, effectually prevent the water from getting over-heated, by arresting the progress of the red or heat-giving rays? — *George Guyon; Ventnor, Isle of Wight, January 21, 1856.*

Entomological Botany (with more especial reference to the Plants frequented by the Tineina). By H. T. STAINTON, Esq.

(Continued from page 4894).

Poterium Sanguisorba. Lesser Burnet.

This appears to be the special food of the pale yellowish larva of *Peronea aspersana*, but I am not aware that it is so of any other Lepidopterous larva.

Agrimonia Eupatoria. Common Agrimony.

A common plant on banks or the dry borders of fields, pushing up a long stem as it goes to seed. By the bye, the seeds of respectable size and hardness ought to be the pabulum of something. The leaves are frequently mined by the larvæ of *Nepticula aurella*.

Alchemilla vulgaris. Common Lady's Mantle.

Cited by Speyer as the food-plant of *Zerene Alchemillata*.

Potentilla anserina. Silver-weed.

This plant is too common to be passed over in silence, but, though I have often looked on it I never yet found a Lepidopterous larva either at breakfast or dinner.

Potentilla reptans. Common Creeping Cinquefoil.*Potentilla tormentilla.* Common Tormentil.

Both common plants; the latter apparently ubiquitous, growing freely on sand-hills by the sea-side and on the summits of Scotch mountains. No Lepidopterous larva has been observed on either.

Potentilla Fragariastrum. Barren Strawberry.

The small white flowers peeping out from amongst the silky leaves are among the harbingers of spring; it delights to grow on shady banks and by the side of path-ways in woods. In the month of September the leaves will be found mined in contorted, slender tracks, by the larva of an unknown Nepticula, which Professor Frey hopes to breed in the spring (see 'Entomologist's Annual,' 1856, p. 62, Enigma No. 5). I have no doubt that the larva of *Lampronia prælatella* eats the leaves of this plant with as much satisfaction as those of *Fragaria vesca*.

Comarum palustre. Marsh Cinquefoil.

Speyer quotes as feeding on this, *Tortrix spectrana*, but I am not aware of any plant growing in moist places that that larva will *not* eat.

As this plant is most at home in peaty bogs, where queer insects may be expected to turn up, it should be scrutinized closely by those who may happen to meet with it.

Fragaria vesca. Wood Strawberry.

Speyer enumerates the following as feeding on this plant:—*Polymatus Alexis*, *Thymele Alveolus*, *Saturnia Carpini*, *Callimorpha dominula*, *Teniocampa I-cinctum*, *Phlogophora scita*, *Hyppa rectilinea* and *Lampronia prælatella*: the two species whose names are here given in Italics have not yet been found in this country; *P. scita*, it must be borne in mind, has some resemblance to *Meticulosa*, and is a species far more likely to be found here than *Empyrea*; *I-cinctum*, allied to our common *Gothica*, is a more southern species, though it has been found in the neighbourhood of Paris.

Lampronia prælatella is one of the most interesting feeders on this plant; none can see, for the first time, the habit of the larva, without a feeling of astonishment at the endless diversity of instinct in these little creatures. The larva constructs a flattened case, not exactly in the form of the figure 8, because not so attenuated in the middle, but very like a fiddle without a handle: in this case it creeps about sluggishly on the leaves of the plant, and when it finds a piece to its taste, instead of eating it *in situ*, it cuts off a large piece and walks away with it; it then attaches its case to the under side of the leaf, and pulls the loose piece of leaf alongside of it, so that the larva and case become completely concealed between the growing leaf and the piece it has cut off for its own private eating; perhaps as the piece thus taken in for store becomes a little withered before it is all eaten, this caterpillar may belong to that class of epicures who like their food a little *high*. When, during cold weather, their appetites are not so great, they content themselves with slowly nibbling the edges of the leaf, without laying in a private hoard. Whether *Lampronia* *Luzella* feeds in any similar way is to us at present a mystery, nor have we any clew to its food-plant.

The wood strawberry is mined by a *Nepticula*, I believe *Aurella*, and also by a Dipterous larva.

Rubus Idæus. Raspberry.

Though best known as a denizen of our gardens, "the wild raspberry grows plentifully in mountainous woods and thickets, especially in the North," and it is in its native haunts that it ought to be most closely examined by the energetic collectors of the North.

Speyer cites as feeding on the raspberry, *Argynnis Daphne*, *A. Paphia*, *Trochilium Hylæiforme*, *Saturnia Carpini*, *Callimorpha Hera*, *Cerastis Vaccinii*, *Scopelosoma satellitia*, *Calocampa vetusta*, *C. exoleta*, *Zerene albicillata*, *Polypogon tarsicrinalis*, *P. barbalis*, *Scopula prunalis*, *Sericoris Urticana*, and *Notocelia Udmanniana*: those species, the names of which are printed in Italics, are not yet reputed British; though I am aware that *C. Hera* has recently been taken at Newhaven, and has lodged a claim for admission to our lists, which claim will probably come on for hearing at the next meeting of the Entomological Society. Of *Trochilium Hylæiforme* the larva feeds in the roots of *Rubus Idæus* in winter and spring, and, as the species is extremely probable to occur here, this suggestion may be of use.

Among the *Tineina* larvæ feeding on this plant one of the most important is *Lampronia Rubiella*; the natural history of this species was

published, as far back as 1781, by Bjerkander, in the 'Acta Holmiæ,' p. 20: the following translation of his notice will probably not be uninteresting to many of my readers:—"On the 9th of May, 1780, as the raspberry-bushes were beginning to put forth their leaves, I noticed some red maggots, which had eaten through the buds into the stems; on the 30th of the month they had spun silken cocoons, and on the 23rd of June, when the raspberry-bushes began to bloom, the moths made their appearance. On the 4th of August, when the raspberries were ripening, we observed the same sort of caterpillars (then one line long) seeking their food on the receptacles, and we continued to see them until the end of the month; probably they go down to the ground, and live through the winter without feeding, but in the spring they seek their proper nourishment. Since from four to eight of these wretches were on one stem, and injured (if they did not quite consume) the buds which would have produced leaves and flowers, we can perceive why, in some years, the delicious raspberries are less abundant."

The next raspberry-feeder I have to mention has not yet been found here, though it certainly will be before long; the moth is a spotless gray *Hyponomeuta*, with a ferruginous head; it is the *Stannella* of Thunberg: this species has not yet been bred, but a gregarious *Hyponomeuta* larva has been found in Silesia on the *Rubus Idæus*, which is *suspected* to belong to this species.

H. T. STANTON.

Mountsfield, Lewisham,
December, 1855.

Proceedings of Natural-History Collectors in Foreign Countries.

MR. H. W. BATES.*—"Villa Nova, Province of the Amazons, September 12th, 1854.—I had prepared all arrangements in April for ascending the upper river, having ascertained at length the arrangement of the steamer from Ega. Villa Nova is a peculiar locality: in December, 1849, in two or three days I was astonished at the number of new things I met with, but at present I have been disappointed; the ground which I hunted then is as yet under water, and I suppose the right season for the locality is from November to about February. Of *Erycinidæ*, at present, I have seen scarcely any; *Nymphalidæ* are more abundant, at present, however, few new (one new *Timetes*, one new *Agrias* (?), one new *Heterochroa*, one *Pyrrhogyra*, &c.) ; *Morphos*,

* Communicated by Mr. S. Stevens.

five or six pieces, two of which fly so high and rapidly that I cannot get at them; one of them is either *Adonis* or *Cytheris*, the other I do not know. In *Coleoptera* and *Hemiptera* I have got a fair amount of new species, but still this is nothing compared to what I ought to be doing higher up. I send a box of my private collection of those families which I cannot keep any longer, on account of mould: the *Staphylinidæ* have all been twice cleaned with spirit, and I am afraid they will become spoilt if I keep them any longer. I must explain a little the remarks made on butterflies to Mr. Hewitson; the sexes figured as different species are *Limnas Vitula* and *L. Thyatira*; I think I ticketed them male and female, but if not, of course Mr. Hewitson, and no one else, could divine that these were the same species of insect; besides this, I rather think the female of *Catagramma Peristera*, is not the true one,—“species placed in wrong genera.” I made this remark because I thought strongly there was much incongruity in his plate of *Lemonias*. *Lemonias* is identical in neuration, palpi, legs, &c. with *Nymphidium*; but it is a good genus, and offers a distinct character in its habits from *Nymphidium*, the species reposing always with the wings closed, whilst all the *Nymphidiums* repose with wings open; I sent in December last the females of two species of *Lemonias*, which are very different from the males, whilst in *Nymphidium* the females are similar to the males. Now, Mr. Hewitson's *Lemonias Senta* and *L. Rhodope* have none of these characters of the *Lemonias*; I think they are *Nymphidiums*, and their introduction into *Lemonias* destroys the harmony of both the genera.

“The *Mundurucús*, and, I think, the *Manhês* also, in their natural state, shave the head, except the front, where they leave a fringe of long hair: when they leave their villages to come with the traders to the civilized places, they let it grow in the usual way. Now, if the hair is wanted to glue to a model, it ought to be in the style of the savages; if only for physiological examination, the hair of any Indian born in the villages will do.* The tribe *Pauxês* are long ago extinct: the *Purús* (called *Purupurús* at *Ega*) inhabit away up the river *Purús*; the *Mundurucús* inhabit the right bank of the river *Tapajos*; the *Manhês* the left bank of the same, as well as the rivers behind *Villa Nova*; the domesticated Indians in *Villa Nova* are nearly all *Manhês*, *Mundurucús* or *Muras*. I made a short (very short) vocabulary of *Manhês* and *Mundurucús* on *Rio Tapajos*; I could not find a single word the same in the two languages.

* This is in reference to a request to procure the hair of the native Indians for Dr. Latham.

"I have looked for the fresh-water sponge here without success at present; when waters sink it is found on branches of trees in Ygapós, &c. There is no want of Ygapós here,—many miles of gloomy hollows in the forest: it will be curious if the sponge is only found in *black waters*, the Tapajos being black, whilst the Amazons and creeks here are white; in the same way I cannot find here either orchids or ferns (except two very small species).

"I am very sorry to hear of the damage done to my collection at the Custom-house; that was the best box, and, in fact, I think, the very best box of butterflies I have ever sent: no one knows the days and weeks of patient search that collection cost me; those beautiful little Erycinidæ were so very rare, and Alta do Chao was the only place in which I had seen many of the species; I am sure many of the grand Diurnes, now so highly prized, will become common in collections long before these Erycinidæ."

"Villa Nova, December 15th, 1854.

"I now send you the result of three months' further labour at this place. Upon the whole I consider it a poor locality; which I attribute to the want of creeks of running water and moist places in the forest. The last collection I sent was on the 12th of September, which I hope arrived safe. There is nothing particular, I think, to call your attention to in the present collection: I hope the fine Agrias is new to you, as it is to me; there is also a new Eueides and some beautiful Hesperia. With regard to the various orders for other things I have from different friends, I can do scarcely anything at present. For Dr. Latham I have done nothing (because impossible here), except getting the exact colour of some few Indians; I cannot get the hair here, as the few Manhés in domestic service here are kept so close cropped. In feathered dresses, weapons (except bows), height, proportions, &c. of a number of full-grown individuals, I cannot do anything without making a special voyage to the villages of the pure blood Indians, which would take me two months. I have a number of notes on the subject of Indians, in which I make out that the whole mass of nations is strongly marked into two distinct classes, &c.; this, by-and-bye, I will communicate to Dr. Latham, if it be interesting to him, but first I should like to see what Mr. Wallace's observations are on the same subject.

"In economic Botany I have only two subjects collected here, not worth sending by themselves, one of them is the Piao (Pinhao, *Lind.*

Veg. Kingd.); the other is a beautiful silky fibre of a species of Malvaceæ, which I think might be made a branch of commerce.

"There is no doubt whatever that the country from Ega to Moyobamba is the richest country in America, in beauty and variety of all departments of Natural History, and the least known, because difficult of access, and beset with the greatest difficulties (as scarcity of food, poverty and savageness of the Indians, and incessant plague of mosquitos, &c.) To-day a French gentleman passed this village on the road from Moyobamba to Pará; he is an amateur geographer (M. Emile Carrey); he brought a few hundreds of Nymphalidæ (in papers), collected in four or five excursions, around Moyobamba: he tells me that the residents there said they never had an entomologist there. Imagine the treat I had to examine the whole of the specimens; they showed me that Moyobamba is indeed a totally new place with respect to Nymphalidæ: there were some fifteen species of Catagramma alone. M. Carrey was surprised to be shown the difference in the species; he thought they were all the same! This fact, together with another, namely, that he could not find any insects at Ega, shows what I could do by a little close investigation. Besides the Catagramma, I noted two Papilio Zagreus and a new Megastanis(?), in all about twenty-five species of the loveliest Nymphalidæ, new to me: three-fourths of the collection of course were common Callidryas, Agraulis, &c."

"April 30th, 1855.

"The small collection now sent contains a few very choice things I believe. In Coleoptera, there are two species of Ctenostoma and a new Megacephala (very similar to *M. curta*, *Reiche*, but smaller, more parallel in shape, &c., and found in company with *Spixii*, at Villa Nova, in the earth: *M. curta* is found under stones close to water, and is common at Santarem, where the new species does not exist): there are many species of Coleoptera which I never sent before. In Lepidoptera, there is a new Eueides; the two or three Catagrammæ and one or two others please note as Moyobamba insects, from a few given me by M. Emile Carrey. There are about twenty specimens of the new insect Gnostus formicicola, *Westw.*: it is found, strange enough, only in one little corner on the edge of the woods, in the galleries only of one small species of ant. Since Sunday last I have examined every hollow twig and branch in the neighbourhood and got only twenty-two specimens; four I keep with me, I send you nineteen, including one old specimen I had kept over from last year. The same dry twigs contain quite as many habitations of other ants,

as *Cryptocerus cordatus*, *Smith.*; but the *Gnostus* is found only in company with the one species of small *Myrmica*. In opening one twig, I observed a *Myrmica* carrying one of the *Gnostus* in its mandibles. I examined frequently dry twigs, &c. in Villa Nova, for ants and their parasites, but found none; in fact, it is difficult to devote oneself sufficiently closely to minute things, when large, conspicuous insects turn up daily, such as was the case at Villa Nova; I worked there daily about five months before finding a *Ctenostoma*; about a fortnight before I came away I began to get one nearly every day: such is Entomology! One clear year should be devoted to every locality on the larger insects alone, a second year to the minute ones, and two or three years to birds, plants and shells.

"You will be sorry to hear I have returned to Santarem; I had no alternative, my health got very low in Villa Nova from bad food. I have now the pleasure of saying that I never felt better, more disposed to work, or happier since I have been in the country. I can assure you with certainty now (D.V.) that I am off to the Upper Amazons; I shall have to get to the Barra in time for the three-monthly Nanta steamer, *i. e.* the 15th of June. Mr. Spruce, I hear, went last voyage, the 15th of March. I shall make Ega head quarters, have a cottage there with a small canoe and a couple of hands, and thus visit all the other places up to Nanta, inclusive. I shall attend to all departments of Natural History, making insects the chief: I take up an immense lot of boxes, &c., all ready; have bought two new guns, &c. The last two months I have worked hard at birds; I never have taken any pains with them before; now, they tell me I put them up very nicely. Since I began to notice birds here, I have been surprised to see how many species of humming birds there are, even at Santarem; I have shot six very distinct species, and have seen, I am sure, four others."

"Ega, Upper Amazons, August 16, 1855.*

"My last letter was from Santarem, I believe, after I had received your parcel of 'Athenæums,' &c. I now write from Ega, 900 miles further up the river, and I suppose you will like to have some account of my voyage. In 1849-50 it took me ninety-seven days travelling from Obydos to Ega; this year I accomplished the journey from Santarem to this place in eight days! (fourteen days including six of delay at Barra), thanks to the Rio Janeiro Government, who pay a steam-boat company an enormous sum to run steamers in a country where the

* Communicated by Mr. F. Bates.

traffic, I should think, scarcely pays for coal and grease. I was fortunate in my voyage, performing it just in the 'nick' of time to escape two very grave inconveniences: one was the cholera, which broke out at Pará, and the next steamer after my voyage suffered horribly; eleven men died in the eight days' journey from Pará to Barra: the other inconvenience was the Upper Amazon steamer, which, a few days after depositing me at Ega, got aground on a sand-bank, the river sinking at the time, so that she remained high and dry for about five weeks, the passengers having to descend in an open boat to Barra. I am sincerely thankful for my good fortune in landing in health and safety, with all my baggage perfectly sound, and in being able to begin my rambles in these glorious forests two days afterwards.

"I arrived on the 19th of June, so that I have been here about two months, and have collected 2600 chosen insects, besides a few land-shells, &c. There is a wonderful difference in the general run of species between this place and Santarem; in fact, with the exception of a very few, common everywhere, the whole insect Fauna is changed: the soil is different, the forests are composed of quite a different class of trees, but there is no place on the Lower Amazons that can at all be compared with Ega, in its exuberant fertility,—rich, fat, black soil,—teeming waters, and hence towering forests. When I arrived the river had just begun to ebb; in a week or two there was sufficient sandy beach exposed for the Megacephalæ to come out, so I commenced my labours in that department: the first thing I found was *M. curta*, *Reiche*, very few; then one or two of a smaller species nearly allied to it; these both disappeared when the sandy beach was further exposed, and I began to take the very curious *M. quadricollis*, *Laporte*; soon afterwards appeared *M. Klugii*, and, in company with it, *M. bifasciata*, *Brullé*, and *M. laminata*, *Perty*? I find that the Ega *M. bifasciata* is the true one, according to Westwood's description, and the allied species common at Santarem is a distinct species, perhaps *M. cruciata*, *Brullé*; examine them for yourself: you will find the Ega species, besides differing in size and colour, has a capital character in the sutural apices of the elytra, which are divergent and produced, whilst in the Santarem species they form simple right angles; this is a character Westwood has overlooked. I have made another observation very similar: there are two species confounded under *M. laminata*; the one I took at Santarem is larger, darker and much more pubescent and punctured on disk of thorax than the one I take here (Ega). I do not expect to find any new Megacephalæ here; but shortly I shall take a trip further up, and hope to find several."

"September 1.—After many delays the schooner, I hear, starts on the 5th. We have had a long run of heavy, wet and squally weather; the dry season is two months backward, and the Lepidoptera have not appeared so abundantly as they should have done. We have had a dull time of it; the steamer only comes once in three months, no sailing vessels have arrived, and we have no bread, hard or soft, or butter, or any European luxuries. I have gone on, however, quietly, as usual: up early, a walk, bath and breakfast; then out with my boxes, selecting the new species and stowing away duplicates, until 9.30 A.M., when the sun is out hot, and it is time to be off to the forest. I have scarcely missed a day, except Sundays, and never return without bringing a species new to me; general average, four or five a-day new. Yesterday I got two new Lamellicorns (one *Anomala*, one *Isonychus*) and one extraordinary and large *Necydalis*, quite new. To-day got another new Longicorn. A few days ago I got a most splendid new *Prionidæ* (*i. e.* new to science), being a *Sternacanthus*, of which there was only one species known before. Of these things there scarcely ever turns up a second specimen, so that my private collection here abounds in beautiful unique specimens of new species. When you consider the great pleasure there is in this, and at the same time the liberty and independence of this kind of life,—the tolerable good living (turtle, fresh fish, game, fowls, &c.),—the suavity of the climate, &c., you will readily understand why I am disinclined to return to the slavery of English mercantile life. One great privation, however, I suffer and feel acutely—the want of frequent receipt of letters, books, newspapers and magazines. Since May last I have not received one line of letter or page of English literature!—the stirring news of war I get only through the miserable, brief notices in Brazilian newspapers.

"I am afraid I shall not be able to send you many species of Geodephaga; this country is known to be poor in that family; not one *Carabus*, and only half-a-dozen *Cicindelæ*. The English Geodephaga make a better show than the Amazonian. We are tolerably rich in *Brachinidæ*, especially *Casnonia*, *Agra*, *Lebia*, *Cordistes* and *Calleida*, but none are common. There are here, at Ega, fifteen species, perhaps, of *Agra*; but I cannot get half-a-dozen specimens of any one.

"Ega is wonderfully rich in *Erotyli*: the woods, after a shower, you meet with great fellows, some nearly an inch long, gay in vivid red, black and yellow colours; they become dull after death. I have now about sixty species of large fine *Erotyli* and *Triplax*. Longicorns

also are of wonderful variety and beauty; I must have near 500 species now in my private boxes. In Lamellicorns many fine species turn up, but they are scarce. Dynastes, almost as large as one's fist (*M. Actæon*); some brilliant *Phanæi*, &c.; *Macraspis*, *Rutela*, &c. Curculiones also are endless in variety. Of course most of my time is taken up by Diurnal Lepidoptera, as most European collections are yet deficient in Ega species: in this department Ega is one of the finest districts in the world. I should like to get an enthusiastic Lepidopterist from England set down here for a morning's ramble with me—just such a morning as to-day: the *Callithea Batesii* appeared for the first time. There is a path along the beach, skirting the banks of the Lake of Ega; the land above is high and covered with forest, and the beach is a grove of *Araçá* trees: the limpid waters of the broad lake break gently on the sands: the trees overhead are full of gaudy coloured birds; the horned screamer (the noisiest bird in the world) yells from the forest; lonely swallows (dark blue, with a ring of white across the breast) are flitting about; but all along the beach is a succession of the most beautiful butterflies in the world. This morning I saw more species than constitute the whole English Fauna in this department; but I saw only four species of *Papilio*—generally there are more: they are ten times more nimble than in colder climates; *seeing* them is *not* getting them nice and perfect in your collecting-box, so that my supposed companion would get, very shortly, a capital appetite for his turtle-soup and steaks before the mid-day sun warned him to desist and avoid too great exhaustion."

"September 14.—In accordance with Brazilian punctuality, the schooner has not sailed, but the owner now says he goes positively to-morrow. I have made some splendid captures since last date in Coleoptera: fine new species in all families; even a *Dynastes*, new to me, two inches long. Some very fine new Longicorns: two new species of the beautiful genus *Gymnetis*, which replaces here the *Cetoniæ* of the old world.

"The steamer will be here positively on the 19th, when I hope there will be letters from you. Believe this to leave me in good health, though, to tell you frankly, I am compelled to be more careful of myself now than formerly, as my stomach is liable to get out of order, and my skin is assuming a decidedly yellow cast.

"H. W. BATES."

PROCEEDINGS OF SOCIETIES.

LINNEAN SOCIETY.

January 15, 1856.—THOMAS BELL, Esq., President, in the chair.

Exhibitions.

The Rev. C. A. Johns exhibited a drawing, together with a specimen of *Sphæria militaris*, found by him in June last, growing from the interior of a pupa, among dead leaves, in Bickleigh Vale, Devonshire.

Mr. Saunders observed that this fungus was well known, although not common: he found it last year near Stokesley, in Yorkshire, and made drawings, which he should be happy to exhibit. This species invariably grows on the pupæ of Lepidopterous insects.

A long and interesting discussion followed, in which Mr. Babington, Mr. Westwood and others took part. [There is a second species of *Sphæria* found in England growing on dead insects: Dickson was the first to notice it; he figures it on the larva of some carabideous insect, and describes it under the name of *Peziza entomorphiza*, giving the habitat in *larvis insectorum emortuis*.—*Crypt.* i. 22, tab. iii. fig. 3].

Mr. Saunders exhibited several vegetable productions, sent to him from Natal by Mr. R. W. Plant, together with a wax-like deposit, in spheroid lumps about as large as a marble, which had been gathered from a tree, and each of which contained the dermal envelope of a female Coccus.

A discussion followed, as to the properties of the wax, in which Mr. Hanbury and others took part.

Lepidosiren and Allied Genera unquestionably Fishes.

Mr. Newman read a paper intitled 'Notes on the *Lepidosiren annectans*,' in which he advocated Professor Owen's view, as to its ichthyic nature. He thought its affinity to the amphibious reptiles was very slight, and called attention to the fact that those metamorphic reptiles with which it had been compared, were either in an immature and confessedly ichthyic condition, as the tadpole of the common frog; or the more mature Siren and Proteus, in which the larval condition appeared permanent: he also invited attention to the teeth, and pointed out their similarity to those of *Echiodon Drummondii*; and to the continuity of the dorsal, anal and ventral fins, a decided character of the *Murænidæ*, and again to the scales and lateral line; the scales were very perfect and precisely those of a fish; and no scales whatever existed in any amphibian reptile: the lateral line was moreover not only exclusively confined to fishes, but particularly characteristic of that class of vertebrates. He considered the most interesting character of the creature to be its skeleton, which Professor Owen had described as exactly intermediate between the osseous and cartilaginous types; and served to connect the *Murænidæ* among the former with the *Petromyzontidæ* among the latter.

Rectification of Statements on the Economy of a Pelopæus.

Mr. Newman read a critical notice of a paper lately printed in the 'Proceedings' of the Society, in which he pointed out several palpable errors; a wasp of the

genus *Pelopæus* was called the "mason-bee;" the female was described as the male; and a small green parasitic *Chrysis* was described as the female. He thought it necessary for the credit of the Society that these mistakes should be pointed out by one of its own Fellows.

Diptera of the Malay Peninsula.

Mr. Saunders read some remarks prefatory to a 'Descriptive Catalogue of the Dipterous Insects, collected by Mr. Wallace in the Malay Peninsula, by Mr. Walker;' the MS. of which was laid on the table.

Election of Fellows.

Nathaniel H. Mason, Esq., J. R. Mummery, Esq. and R. J. Shuttleworth, Esq. were elected Fellows.

February 5, 1856.—THOMAS BELL, Esq., President, in the chair.

Mr. Newman read the following

Note on Atypus Sulzeri of Latreille.

"I beg to exhibit a specimen of the *Atypus Sulzeri* of Latreille, a spider not uncommon in some parts of France, and which is recorded by Dr. Leach, in the 'Supplement to the Encyclopedia Britannica' (4th Edition; Art. Annulosa), to have occurred in the neighbourhood of Exeter and London. Dr. Leach's statement appears to have been received with some distrust, owing to a supposed carelessness in his records of habitats, and, although many years have intervened, has never been confirmed. It is, therefore, with peculiar pleasure that I am able to establish, beyond a doubt, the claim of the species to be regarded as British, and to make some additions to our knowledge of its most interesting economy. In the first place, however, it is necessary to state that for my knowledge of the name and published history of this spider, I am indebted entirely to Mr. Meade, of Bradford, whose courtesy in rendering assistance to any student of his favorite science of Arachnology is familiar to all who have applied to him; and for the detail of its habits, as observed in the South of England during last summer, I have to thank Mr. Brown, of Cirencester, one of the most acute and skilful observers it has ever been my good fortune to meet with. Walckenaër, in his 'Histoire Naturelle des Insectes Aptères,' describes this spider under the name of *Oletera Atypa*, and thus records its economy:—'The female constructs, in rather moist places, a subterranean gallery, extending first in a horizontal direction, and then turning downwards; she spins in the interior of this gallery a very close white silken tube, which she strengthens with bits of grass and moss; and at the bottom of this, she deposits her eggs in an oval-shaped mass, enveloped in a web of white silk and fixed by threads at each end. She leaves part of the tube hanging out of the hole to protect the entrance: this external part is two or three inches long, and half an inch in diameter. The tissue of the tube is very close, fine and white, and resembles the cocoons in which some Lepidopterous pupæ are enclosed. It is of uniform diameter, and terminates below in a slightly pointed

extremity: this extremity is attached to a bundle of silky hairs interlaced with fibres of plants. Thus the bottom of the tube is protected from the humidity of the earth." — *Walckenaër, op. cit. i. 244.*

"It appears that the male of this species is much more common in France than the female; he is erratic in his habits, and hides under stones. I cannot find that he has ever been found in company with the female, or in a subterranean gallery; and I may add, as a collateral fact, that the males of our commonest spiders seem to differ considerably from the females in their mode of life; they are far less voracious, and those of the geometricians rarely construct the well-known webs. I will now cite Mr. Brown's observations on *Atypus*, in his own words: — 'When on a visit to Hastings during the past autumn, having to pass through a lane, with a high and steep sand-bank on each side partially covered with grass and bushes, I noticed, on one of the banks which had a south aspect, something hanging down which looked like the cocoon of some moth; but found, on compressing it slightly, that it was quite empty: it then occurred to me that it might be the nest of a spider; and, on examining it more closely, I found, to my surprise, that it descended into the bank, and appeared firmly attached at the distal extremity; so firmly indeed, that I could not extract the first I found without breaking it. My curiosity, however, was now thoroughly awakened, and on finding a second example, I went more cautiously to work, removed the sand carefully with a long knife, and at a depth of nine inches, I found the extremity of the structure and drew it out quite perfect. It was a long silken sac, and at the bottom was a hardish lump, which proved to be a spider. The next I tried went much deeper, indeed so deep that I failed, after much trouble, in getting it out at all. I tried many others, sometimes succeeding and sometimes failing in my attempts to get them out entire. I found them vary greatly in length, and think they may be lengthened at various periods of the spider's growth: in some of the nests there seemed very obvious indications of this lengthening: the usual length was about nine inches, but some were very much longer. Their form is tubular, commonly of a uniform diameter of three quarters of an inch, and rounded at one end in the form of a purse: they are composed of very fine silk closely woven throughout, white or whitish within, and covered exteriorly with yellowish or brownish particles of sand, which give the tube a dirty appearance exteriorly, but inside they are always neat and clean. The exterior portion of this tube visible on the bank is about two inches in length, pendant, and always inflated; it is of a darker colour than the subterranean portion of the tube, and agrees in this respect with the general surface of the bank. I took home one of these tubes in a collapsed state, or with the sides pressed together, and having the spider at the extremity: on opening the box I perceived a movement throughout the tube, as if it were undergoing the process of inflation: this soon subsided: the next morning, however, I was surprised to see the tube inflated throughout its entire length, more especially at that end which had been exposed on the bank. How can the spider effect this? In some of the tubes it is very difficult to discover any external aperture; but, in that portion which is exposed and is distended more than the rest, I sometimes discovered one or more minute openings, protected or covered by a little valve or door: in some nests these openings are not to be detected; when present, they open towards the bank. Although very loosely constructed at the lower extremity, I do not think there is an opening there, except when the spider is deepening her burrow, or I think, in some instances, the

spiders would have escaped through it when I extracted the sacs: this was never the case.

“A circumstance in connexion with one of these nests may throw some light upon the kind of food on which these interesting creatures live, or at any rate, which they occasionally meet with: on drawing out one of the sacs I observed a worm at the lower end, partially within the sac and partially outside; and that the spider had evidently been eating a considerable portion of its anterior extremity. It is not unlikely that this kind of food may frequently fall to the lot of the spider, a poor worm, in its mining progress, blindly thrusting its head into the spider's den! The spider, removed from her sac, is extremely slow, sluggish, lethargic, and apparently helpless; several which I kept in a glass remained nearly motionless at the bottom; and one which I introduced into another glass along with another species (*Epeira diadema*), was instantly attacked by the latter, and soon killed or rendered powerless, offering but little resistance, a result quite different to what I had expected from its formidable appearance.

“This spider, when full-grown, is about three-quarters of an inch in length, and of a brown colour; the forceps very strong, and furnished, along the keel, with twelve sharp triangular teeth or spines; the extremity is armed with a pointed curved claw, two and a half lines in length; there are two four-jointed palpi, three lines in length: the two mandibles are furnished with small teeth, almost concealed by a fringe of strong hairs of a reddish colour: I am not certain whether the row of spines is single or double: the first pair of legs is the longest, and they diminish in length to the last pair, which is shortest: there are four spinnerets; the longer pair have three articulations, and are situated above the other pair: the eyes appear grouped together on the anterior part of the cephalothorax, which projects in front, is shining, and destitute of hair: all the other parts of the spider are covered, but not thickly, with fine brown hairs; these are most numerous on the abdomen.

“I have no doubt these spiders may be found scattered along the southern coast of England wherever the Hastings sand formation predominates. I enclose a full-grown female; one of the tubes entire; another broken off at one end; an example of the exposed portion or cocoon-like extremity cut off, and another of the same part cut open longitudinally.’

“It may be added that Mr. Brown did not find a male, and wonders where they secrete themselves.

“From a careful examination of the purse or exposed portion of the tube, it is evident that there is no aperture by which the spider can pass into the open air: having with a pair of scissors cut off the purse, I find it can be readily inflated by means of a glass pipe introduced at the cut end, but it does not appear air-tight: when thus inflated, the minute apertures are probably closed. I have been unable to find these apertures in the specimen on the table; but the experiment proves, in a satisfactory manner, that, if present, they must open inwardly, and thus would, of course, be closed by the pressure of air from within. Of their existence I have little doubt, and the fact of my not finding them I attribute solely to a want of sufficient skill in manipulation and observation. The object of these valvular openings must be to admit air, for this could not enter the tube by any other means, and the spider, being a pulmonary breather, must require considerable supplies of oxygen.

“Returning to the subject of food, no one will doubt for a moment that a female spider, maturing her eggs for extrusion, is possessed of a good appetite, and has every

disposition to indulge it: any theory in contravention of this idea is opposed to all that we know of the natural history of spiders. I would then observe, *first*, that she has no access to the outer air, the exposed surface where insects, the ordinary food of spiders, are to be found; *secondly*, that the web is not glutinous; and *thirdly*, that I cannot find a fragment of an insect in any part of either of the tubes, and it seems to me that such fragments must occur if insects were the food of the spider.

"Not contented with my own search for the remains of insects, I wrote again to Mr. Brown, stating the result, and begging him to investigate further, which he has done, and replies thus:—'I have never seen any flies or fragments of flies attached to any part of web; the only thing I can find is a portion of the cast-off skin of the spider herself, and this is in the cocoon or exposed end of the nest: in one of these there is a considerable quantity of their exuviae. With respect to flies or any other insects getting entangled in the web, I do not think it possible, *first*, because it is not glutinous or adhesive; and *secondly*, because it is always covered with grains of sand, which, supposing it had been glutinous originally, effectually prevent the adhesion of any extraneous object.' In answer to my pointed inquiry, whether the spider ever comes out of the tube, Mr. Brown writes:—'I will not say that the spider never comes out of the nest, or is incapable of opening the extremity for that purpose, but I have never seen one do so, and I have no evidence that such is the case: the spiders in five tubes, which I extracted entire and kept at my lodgings, passed backwards and forwards, but never came out at either end: the longest of these perfect sacs was eleven inches in length.' I therefore concluded, from the absence of fragments, that the spider does not feed on insects; and, from the structure of her domicile, that she has no means of obtaining them. Combining this negative evidence with the positive fact, that the spider is strictly subterranean, living in places where worms abound, burrowing to an unknown depth, occurring always in damp situations, and, to crown all, having before us the statement of a most careful and eminently cautious observer, that in one instance he found the spider had eaten a portion of a worm, we may, I think, congratulate Mr. Brown, not only on having restored a most interesting species to the British Fauna, but also on having discovered a singular aberration from the normal economy of the world of spiders. Nevertheless, on communicating this view of the case to Mr. Meade, that eminent arachnologist, with laudable caution, expresses himself thus:—'I cannot help thinking that it was only a fortuitous circumstance that an earthworm was found in the retreat of the *Atypus*, though it is quite possible the spider might feed on the worm when it came in its way: many spiders are so voracious, as even to devour one another. My reasons for giving this opinion are, *first*, that a worm could not readily penetrate through the firm silken walls of the tube, and the one in question may have been met with while the spider was making the excavation: *secondly*, the *Atypus*, in common with other mining spiders, and with all those spiders called by Walckenaër, *Incluses*, shuts itself up in its cell or tube by day, and wanders about in search of prey at night. It never appears to convey any food to its nest: the young when hatched are carried about on the body of the mother, just in the same way as the young of the *Lycosæ*. I think it most probable that the *Atypus* closes up with fresh silk every day the aperture through which it enters the sac, and that it makes a fresh hole through which to issue at night. The trap-doors and other contrivances constructed by exotic spiders, answer the purpose of keeping out enemies, in the same way as the external portion of the sac of the *Atypus*; and I believe that all these spiders are erratic in their habits, and none of

them bring home prey to their retreats.' Mr. Meade thus disposes of the facts, on which I felt inclined to lay great stress, the non-glutinosity of the web and the absence of the remains of insects in the sac. Mr. Brown, the discoverer, on the other hand, inclines to believe that worms are the normal food of these spiders, and supports his view by pointing out the depth to which some of the individuals burrow, which is far greater than required for safety; and also by the structure of the mouth, widely different from that of ordinary spiders, and expressly adapted for the mastication of flies: he thinks also that a worm once captured would not necessarily be killed by the spider, but might be devoured piecemeal while still living, an operation that seemed actually in progress in the isolated instance which he had an opportunity of observing: he has re-examined the sac, in reference to Mr. Meade's explanation of a nocturnal breach in the texture mended every morning, but he finds no evidence of such breaches. In reference to the difficulty urged by Mr. Meade, which a worm would find in passing through the wall of the sac, it seems more probable that the spider would obtain the worm at the lower extremity of the sac, where her excavations appear to be continually going on. The question of food must therefore remain *sub judice*, and other points in the history of this most interesting spider seem to invite further investigation."

The President, after alluding to previous discussions which had taken place at the Society, on the habits of the water-spider (*Argyroneta aquatica*), observed that he had repeatedly seen that species feeding on worms, but had observed that the spiders seemed rather to suck the juices of the worm than to masticate its flesh.

Mr. Westwood agreed in the explanation given by Mr. Meade of the fact observed by Mr. Brown.

Election of Fellows.

Henry Christy, Esq. and Alexander Goodman More, Esq., were elected Fellows of the Society

February 19, 1856.—ROBERT BROWN, Esq., Vice-President, in the chair.

Analysis of the Galls of Cynips Lignicola.

Dr. Vinen read a paper on the amount of tannin existing in the galls of the *Cynips Lignicola* of Hartig: he was induced to undertake the analysis by an account lately published in the 'Gardener's Chronicle,' which stated that a new gall had appeared in such abundance in Devonshire as to threaten the destruction of the oak. He found that the Devonshire galls contained but 17 per cent. of tannin, while the Aleppo gall, the well-known ink gall of commerce, contained 56 per cent.; the discrepancy was very great, and possibly in some degree attributable to the fact, that whereas all the Aleppo galls were entire, those from Devonshire were all perforated by the *Cynips*: it was a well-known fact that a sample of the galls of commerce was depreciated in value by the presence of any that were perforated. Dr. Vinen, however, wished to call the attention of the Society to the extraordinary discrepancy existing between the published analyses of the Aleppo galls, greater even than that

between his own analyses of the Devonshire and Aleppo galls. Sir Humphrey Davy's analysis yielded 26 per cent. of tannin, Pelour's 40, Leconnet's 60, Guibourt's 65, Mohr's 72, and Buchner's 77.

New Insects from Western Africa.

Mr. Westwood read a description of a new *Paussus*, which he named *P. Murrayi*, from New Calabar, on the Western Coast of Africa; and exhibited a new insect, allied to *Cistela*, with curiously dilated and winged metatibiae, from the same locality. *

Election of Fellows.

Albert Hambrough, Esq., and the Rev. Charles Popham Miles, M.A., were elected Fellows of the Society.

ENTOMOLOGICAL SOCIETY.

January 7, 1856.—J. O. WESTWOOD, Esq., V.-P., in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the donors:—‘Transactions of the Linnean Society,’ Vol. xxi. Part 4. ‘Proceedings of the Linnean Society,’ Nos. 59, 59,* 60, 61, 62, 63, 64, 65, 66. Address of Thomas Bell, Esq., V.P.R.S., &c., the President; together with obituary notices of deceased Members, by John Bennett, Esq., F.R.S., the Secretary, read at the Anniversary Meeting of the Linnean Society on Thursday, May 24, 1855. ‘List of the Linnean Society of London, 1855;’ presented by the Linnean Society. ‘The Natural-History Review,’ Vol. i. and Parts 5, 6, 7 and 8; by the Dublin University Association. ‘The Entomologist’s Annual for 1856;’ by the Editor, H. T. Stainton, Esq. ‘List of the Specimens of Lepidopterous Insects in the Collection of the British Museum, by Francis Walker, Esq., F.L.S., Part 5, *Lepidoptera Heterocera*;’ by the Editor. ‘The Literary Gazette’ for December; by the Editor. ‘The Athenæum’ for December; by the Editor. ‘The Zoologist’ for December; by the Editor. ‘Journal of the Society of Arts’ for December; by the Society of Arts.

Election of Members.

William Marshall, Esq, Springfield, Upper Clapton; John Thomas Syme, Esq., 11, Gower Street, Bedford Square; and James Thomson, Esq., 23, Rue de l’Université, Paris, were balloted for and elected Members of the Society.

Exhibitions.

Mr. Samuel Stevens exhibited a box containing three fine species of *Lucanidæ*, taken by Mr. Wallace at Sarawak, in Borneo, including a remarkable variety of *L. Brookiana*.

Mr. Edward Sheppard exhibited a specimen of *Lebia crux-minor*, taken by sweeping the long lythe at Selborne, in August last, by the Rev. G. Livesay.

Mr. Westwood called attention to some glasses on the table, containing water-beetles collected for the purpose of stocking aquariums, by Mr. F. S. Leach.

Mr. J. A. Turner exhibited a box of Coleoptera from Texas, containing many fine specimens of Longicorns; he also exhibited a splendid pair of *Goliathus giganteus*, from the Gaboon River, West Africa.

Mr. Stainton exhibited a specimen of *Callimorpha Hera*, and read a letter on the subject, addressed to him by Mr. Cooke, of Pelham Terrace, Brighton.

Mr. Newman communicated the following:—

Characters of Three Pseudomorphina in the Cabinet of Mr. Waterhouse.

"Mr. Waterhouse having most obligingly lent me his collection of *Pseudomorphina*, I have given the specimens a somewhat careful examination, and find three species which I suppose to be undescribed. I take the liberty of offering to the Society brief descriptions of these, and at the same time of soliciting the opportunity of examining other collections of these interesting insects.

"*PSEUDOMORPHA AMAROIDES*, Newman.

"*Lævis, glabra; antennis, sterno, ventre, pedibusque piceis; capite nigro, labro ferrugineo; prothoracis et elytrorum disco nigro, marginibus arcte at manifesto ferrugineis.* (Corp. long. .3 unc. elytrorum lat. .15 unc.)

"Smooth, shining, black above, pitchy black beneath; antennæ pitchy black; head smooth, with two obscure foveæ on the epicranium between the eyes, black, the labrum and mandibles bright ferruginous, the latter with the apices pitchy black; prothorax black, its lateral margins slightly dilated and recurved, and brightly ferruginous; near its posterior margin are two shallow ill-defined foveæ; the scutellum is conspicuous, triangular, acute and extremely glabrous; elytra black, their costal margin continuous with the lateral margins of the prothorax, and like them slightly dilated and recurved, and brightly ferruginous; at the base of each, very near the scutellum, is an obscure fovea; the posterior margin is sinuate, truncate, and tinged with dusky ferruginous, the marginal ferruginous line of prothorax and elytra is very narrow, but extremely well defined; the entire upper surface of head, prothorax and elytra is covered with very minute confluent punctures; these are only discernable under a lens of high power, and scarcely detract from the general glabrous appearance of the insect.

"There is a single specimen, the only one I have seen, in Mr. Waterhouse's cabinet. Its habitat is 3753.

"Although the *genus* *Amara* is now banished from our catalogues, the mind of the British Coleopterist, clinging fondly to the word, will see the drift of my specific name, should he ever meet with this pretty antipodean. Its size and figure at once call to mind the most familiar species of that most familiar genus.

"*ADELOTOPUS EPHIPIATUS*, Newman.

"*Lævis, nitida, picea, elytrorum paginâ basali late testacea, prothoracis latera pallidiora valde dilatata et reflexa; prothorax elytris latior.* (Corp. long. .2 unc. elytrorum lat. .075 unc.)

"Smooth, shining, pitchy black; the sides of the thorax and the entire under surface of the insect inclining to ferruginous; the elytra at their base adorned with a

somewhat saddle-shaped testaceous mark; head, prothorax and elytra minutely and regularly punctured; head prone, deeply immersed in the prothorax; labrum rounded and much produced, cheeks enormously developed; prothorax much broader than long, slightly broader than elytra, its anterior margin excavated to receive the head, and produced into an obtuse teeth on each side of it, its lateral margins much dilated and recurved; scutellum very minute; sides of elytra parallel, slightly recurved, apex truncate, the corners rounded.

"Examples of this insect, which, when its mouth is examined, will probably form a new genus, are in the cabinet of the British Museum, as well as in that of Mr. Waterhouse.

"ADELOTOPUS RUBIGINOSUS, Newman.

"*Lavis, nitidissimus, rubiginosus, omnino concolor, elytra sub lente forti subtilissime puncta.* (Corp. long. .175 unc. elytrorum lat. .07 unc.)

"Smooth, extremely shining, ferruginous and perfectly concolorous on every part of the upper and under surface; head rather large, convex, prone; eyes large, distant, black, prominent; prothorax very convex, very glabrous, its lateral margins slightly dilated and recurved; scutellum rather large, conspicuous, triangular; elytra very convex, parallel, the costæ slightly dilated and recurved, the apex truncate, the disk exhibiting a very slight appearance of striation.

"This pretty little beetle certainly resembles Mr. Westwood's *Adelotopus aphodioides*, described at p. 404 of the fifth volume of the new series of Guérin's 'Revue et Magasin de Zoologie.' There are specimens in the cabinet of the British Museum, as well as in that of Mr. Waterhouse."

Nests of Hymenoptera from Port Natal.

Mr. Smith exhibited some nests of Hymenopterous insects collected by Herr Guenzius at Port Natal, and read the following notes respecting them:—

"I have the pleasure of exhibiting to the Society a number of nests of exotic Hymenoptera, collected by Herr Guenzius at Port Natal. This collection is rendered exceedingly interesting, by each nest having specimens of the insects by which it was constructed sent with it; it also receives additional interest from the fact of all the species being described ones. I have thought it desirable to give a reference to the work in which each species is described, as well as a description of the nests themselves.

"1. *Synagris calida, Vespa calida, Linn. Syst. Nat. Vol. i. p. 952.* The nest of this insect is constructed of the red earth common to the neighbourhood of Port Natal; the form at the base is an irregular oval; its length at its greatest diameter is nearly three inches; the height of the nest is an inch and a half, its general form being somewhat that of half an orange, having one side slightly elevated, forming the entrance to the nest; the bottom of the nest shows that it has been attached to a flat surface; only four cells are visible, all of which are empty; in two of these were found the remains of the corneous heads of some Lepidopterous larvæ; the upper surface has a hole opposite each of the empty cells, one being immediately under the larger opening or entrance used by the parent insect: the other holes are a little smaller: from these no doubt the insects made their escape: there is room for two more cells, and such may possibly exist, but neither the under nor upper surface exhibit any traces of them.

"2. Nest of *Synagris mirabilis*, *Guér. Voy. en Abyss. de Le Fèvre*, vi. *Ins.* p. 359, pl. 8, fig. 8. This nest is much smaller than that of *S. calida*, and is probably in an unfinished state; its form is somewhat quadrate, with the angles rounded; it contains only two cells, each having, as in the other species, a separate outlet. This nest is constructed of a different-coloured earth, being of the ordinary mud-colour. It is exceedingly interesting to find that the habits of this genus of wasps is similar to that of *Odynerus*. I have in my possession a nest of *O. parietinus* formed of earth in a similar manner.

"3. The nest of *Eumenes tinctor*, *Christ. Hym.* This is a very abundant and well-known species. The nest differs from that of every species of this genus with which I am acquainted: all the nests which I have seen are globular, or sometimes flask-shaped, each consisting of a single cell. The only British species, *Eumenes coarctata*, constructs a small nearly globular nest of mud, forming a single cell; it constructs a separate nest for each individual: these nests I have found in Hampshire, attached to twigs of heath. The nest, however, of *Eumenes tinctor* is very different; it is pear-shaped and constructed of mud, being three inches and a half long and nine inches in diameter at its widest part, but is considerably narrower at the top and obtuse at the bottom. This nest appears to have been constructed amongst rank grass or reeds, having blades passing through it; by these means it was doubtless held in a suspended position: there are twelve outlets, showing that a number of individuals have issued from it.

"4. *Raphigaster Guineensis*, *Sauss.* This is the *Zethus Guineensis* of Fabricius, *Syst. Piez.* 283, 2. The nest of this species consists of a number of exposed cells attached to each other, a slender twig forming the base of attachment; the cells are about an inch in length, and of a very thin papery texture; the number in the nest exhibited is seventeen; there are eight unfinished cells: what may be an average number in finished nests has not been ascertained, but either it must be considerable, or the number of nests very great, as the insect is extremely abundant.

"5. *Mischocyttarus labiatus*, *Sauss.* *Zethus labiatus* of Fabricius, *Syst. Piez.* 284, 6. This nest is very similar to the preceding in form and mode of attachment; it is placed upon a slender twig; the texture is, however, very different, being apparently constructed of decayed wood: it is very fragile, and breaks with a slight touch, similar to the cells of *Vespa vulgaris*: the cells are of a circular form.

"6. *Icaria guttatipennis*, *Sauss.* This wasp is described in *Mon. des Guêpes Sociales*, p. 40, 19, pl. 5, fig. 8. Its cells are exposed in the same manner as those of a *Polistes*, and are hexagonal. This nest is of the greatest interest, as exhibiting a direct contradiction to the theory that all cells are originally constructed of a cylindrical form, and that the hexagonal form is attributable to the fact of the insects working in concert in opposite cells, the space between the cells gradually falling into straight sides, thus forming regular hexagons; consequently the outer surface of the exterior cells will be rounded. The nest of this insect exhibits a series of regular hexagons, the outer cells being as sharply angulated as the inner ones.

"7. *Eumenes* ——— This is a small mud nest, of globular form, about the size of a cherry, adapted to contain a single larva; it is attached to the back of a leaf.

"8. *Odynerus* ——— This wasp constructs a nest in hollow reeds, lining and separating the cells with red sandy loam, in the same manner as the *Odynerus lævipes* of Britain.

"9. *Pelopæus chalybeus*, *Smith, Cat. Foss. Hym.* Part 2. The nest of this insect is especially interesting. The species of the genus *Pelopæus* are popularly known as mud-daubers in America. They differ in the mode of constructing their nests; some species appear to place single cells in different situations; others construct a number close together, and even one cell upon another. *P. chalybeus* differs from all the species whose habits have been recorded; it constructs single cells of cow-dung, attaching them to stems of grass. From one of the nests I extracted a perfect specimen of the insect.

"10. *Chalicodoma cælocera*. This is the *Megachile cælocera* of my 'Catalogue of Apidæ,' published by the British Museum. The genus *Chalicodoma* of St. Fargeau cannot be maintained upon structural differences: the habit of the species alone entitles it to the rank of a subgenus. These insects construct nests of clay or sandy loam, attaching them usually to walls; a number of cells are formed, and when the whole are furnished with the requisite supply of pollen and honey the cells are closed, and the whole then covered over with a mass of sandy loam. The nest of *C. cælocera*, which I exhibit to the Society, is of an elongate form, being seven inches in length, two and a half in width, and one and a half in elevation at its greatest convexity; there are seven outlets, from which the bees have escaped: probably there are others which have perished in the cells. The mixture of red earth and small pebbles, of which the nest is composed, is excessively hard, and it must be a task of great labour to the bee before it can perforate so hard a substance; both sexes are therefore furnished with short, exceedingly stout, toothed mandibles for that purpose.

"11. This is the nest of a species of *Ceratina*, formed in the stem of a shrub which has a large pith in the middle, similar to the common elder of Europe. The channel formed by the bee is three inches in length, exactly similar to that formed by *Ceratina cærulea*.

"12. Nest of a small species of *Anthidium*,—*A. cordatum*, *Smith*. This nest is interesting, as showing a reverse of the habit of the British species of the genus, *A. manicatum*, which usually selects ready-formed holes in posts or rails; its nests have also been found in the locks of out-houses, &c., always, I believe, in some ready-formed place of security; *A. cordatum*, on the contrary, attaches its cells to the stems of plants; that which I exhibit consists of two; these are formed apparently of a resinous substance, which melts when heated; outside, the cells are covered with the woolly down of plants.

"13. This is a portion of a dead branch, probably having formed part of some railing or fence, into which *Xylocopa trepida* has burrowed, the entrance being large enough to admit of the little finger; the diameter of the tube inside is exactly three-fourths of an inch."

Mr. Lubbock read a paper intituled 'On some Entomostraca collected by Dr. Sutherland in the Atlantic Ocean.'

Mr. Westwood read a paper on *Cryptodus* from New Holland.

Mr. Stainton read a paper on three Indian species of Micro-Lepidoptera bred by Mr. Atkinson.

Mr. Janson communicated some notes on *Hygrotus bisulcatus*, *Curt.*, and *Apion Curtisii*, *Kirby, MSS.*, of which insects drawings were exhibited at the December meeting, contending, on the authority of Dr. Erichson and subsequent writers, that

the first-named species is the *Hydroporus unistriatus*, *Illig.*; and that, as the late Mr. Stephens had applied the name of *Curtisii* to a totally different species of *Apion*, prior to the publication of Mr. Curtis's description of the *Curtisii*, *Kirby, MSS.*, it is evident that a new name must be imposed on Mr. Curtis's insect.

Anniversary Meeting, January 28, 1856.—EDWARD NEWMAN, Esq., F.L.S., in the chair.

The Reports of the Library and Cabinet Committee and the Treasurer's audited accounts were read and approved: the latter showed a balance in hand of £74 19s. 5½d.

Messrs. J. S. Baly, F. P. Pascoe, W. W. Saunders, and G. R. Waterhouse were elected members of the Council, in the room of Messrs. E. Newman, A. F. Sheppard, Edward Sheppard, and S. L. Waring. W. Wilson Saunders, Esq., F.R.S., &c., was elected President; S. Stevens, Esq., F.L.S., Treasurer; and Messrs. J. W. Douglas and Edwin Shepherd, Secretaries.

The Chairman delivered an Address on the State and Management of the Society, giving also a summary of its proceedings during the year, and an analytical notice of all Entomological Books and Papers published in Great Britain during the same period. The Meeting passed a vote of thanks for this Address, and ordered it to be printed.

A vote of thanks was passed to J. Curtis, Esq., for his services to the Society and his courteous conduct in the Chair; and on the motion of Mr. Westwood, it was resolved that a portrait of Mr. Curtis should be procured and hung up in the Meeting-room.

Votes of thanks were then passed to the Treasurer and Secretaries.—J. W. D.

February 4, 1856.—W. W. SAUNDERS, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the respective donors:—‘*Exotic Butterflies*,’ Part 17; by W. W. Saunders, Esq. ‘*Revue et Magasin de Zoologie*,’ 1855, Nos. 10 and 11; by the Editor, M. Guérin-Méneville. ‘*Proceedings of the Royal Society*,’ Vol. vii. No. 16; by the Society. ‘*Entomologische Zeitung*’ for December, 1855; ‘*Entomologische Zeitung, Sechszehnter Jahrgang*’ (1855); ‘*Linnaea Entomologica*,’ Vol. x.; by the Entomological Society of Stettin. ‘*List of the Specimens of Lepidopterous Insects in the Collection of the British Museum. Part vi.—Lepidoptera Heterocera*’; by the Author, F. Walker, Esq., F.L.S. ‘*The Journal of the Society of Arts*’ for January; by the Editor. ‘*The Literary Gazette*’ for January; by the Editor. ‘*The Athenæum*’ for January; by the Editor. ‘*The Zoologist*’ for February; by the Editor. ‘*Memorias de la Real Academia de Ciencias de Madrid*,’ Tomo ii. 1a Serie; ‘*Ciencias Exactas*,’ Tomo i. Parte 1a.; The same, Tomo i. 3 Serie; ‘*Ciencias Naturales*,’ Tomo i. Parte 3; ‘*Resumen de las Actas de la Academia Real de Ciencias de Madrid*,’

1852 à 1852; The same, 1852 à 1853; by the Royal Academy of Sciences Madrid. 'Swammerdam's Historia Insectorum Generalis,' 4to; by John Curtis, Esq.

The President returned thanks for his election, and nominated as Vice-President for the year, Messrs. J. O. Westwood, G. R. Waterhouse, and Frederick Smith.

Election of Members.

A. H. Haliday, Esq., 23, Harcourt Street, Dublin, was balloted for and elected Member of the Society.

Exhibitions.

Mr. Samuel Stevens exhibited a splendid new Lamellicorn beetle, of the genus *Odontolabris*, from Borneo.

Mr. Moore exhibited a number of cocoons of *Megachile lanata*, found in an ox-buffalo's horn from Northern India; one of these contained an immature parasite, probably a *Hedycrum*.

Mr. Baly exhibited a specimen of the rare *Cryptonychus porrectus*, *Gyll.* received from Old Calabar by Mr. Murray, being the only specimen known in Britain; this species is extremely interesting, from the fact of being an American form, though found in Africa.

Read the following note by Mr. Hewitson, dated the 28th of January :—

Sound produced by the Peacock Butterfly.

"One morning about a fortnight ago, whilst dressing, I noticed something upon the floor, which I took to be a dead leaf driven in by the wind, and was surprised when I picked it up and placed it on the table, to find that it was a peacock butterfly (*Vanessa Io*). They had been cleaning out my room and had driven it from its winter quarters; I had handled it rather roughly, which it resented, by spreading out its wings horizontally to their fullest extent and rubbing them rapidly together; it produced a distinct sound like the friction of sand-paper: this it continued to repeat for some time and seemed greatly exasperated. It might be partly in my own imagination, but its palpi, the position of its legs, every motion seemed to express passion. I brought it down stairs and placed it on a table in the drawing-room, where Mr. Westwood, who was with me at the time, heard the noise faintly, but we tried in vain to excite it again to anger.

"I intended to examine the base of the wings and try to ascertain the means by which it produced the noise, which has never yet been done with the living insect, but it stole away and hid itself so effectually as to elude our search.

"M. Lacordaire mentions a similar sound produced by butterflies of the genus *Ageronia*, whilst on the wing, which he compares 'a celui d'un parchemin très sec qu'on froisserait entre les mains.'

"The clicking noise mentioned by Mr. Darwin was produced by a butterfly of the same genus.

Mr. Douglas observed that the Rev. Joseph Greene had noticed a very similar circumstance in hibernating specimens of the same species, *Vanessa Io*, of which he communicated a note to this Society, and which is published in the 'Proceedings' for 1853, page 98.

EDWARD NEWMAN'S ANNIVERSARY ADDRESS TO THE ENTOMOLOGICAL SOCIETY for 1856 is now ready. *Price 1s., free by post.*

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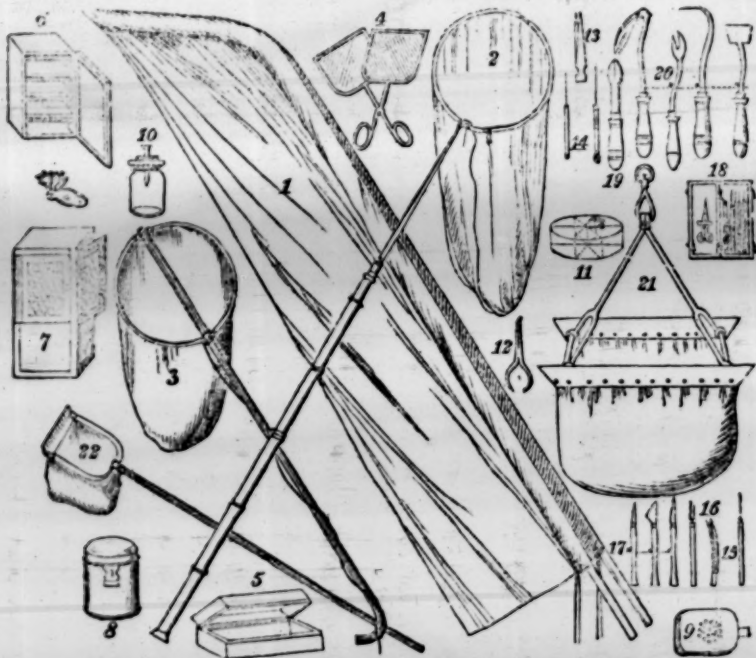
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